

Bristol Bay Native Corporation

Anchorage, Alaska

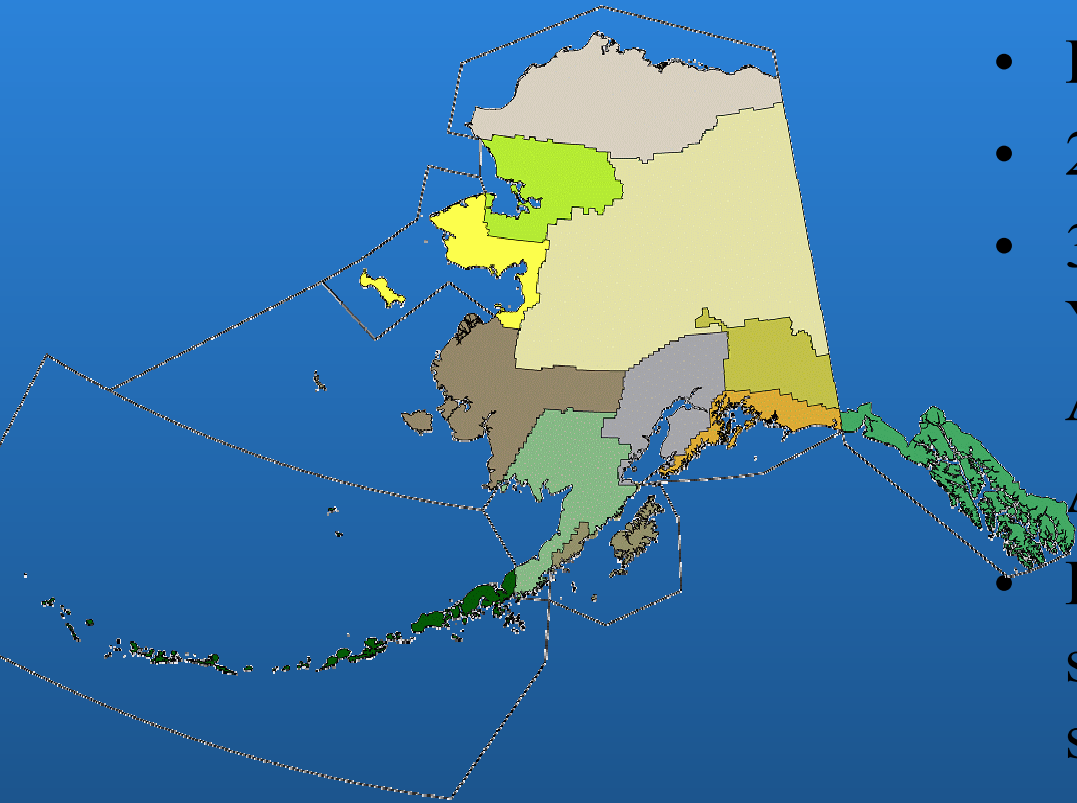
Wind and Hydroelectric Feasibility Study

April Ferguson – BBNC

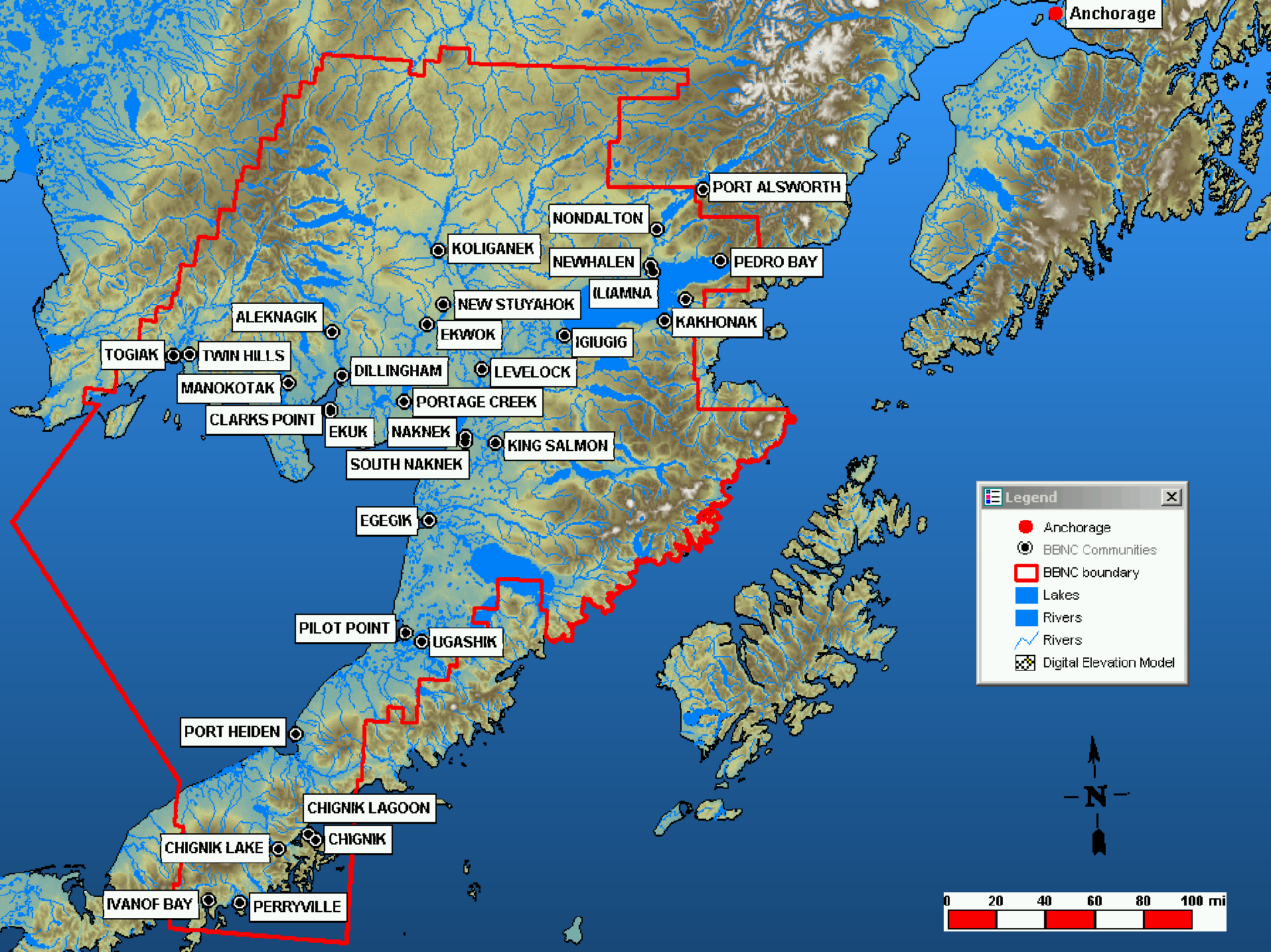
Doug Vaught – Consultant to BBNC



The Bristol Bay Region



- Located in SW Alaska
 - 29 communities
 - 3 Native cultural groups – Yup'ik Eskimos, Athabascans, and Alutiiqs
- About 7,800 people
- Region covers 40,000 square miles – about the size of the state of Ohio.



The Bristol Bay Region

- Caribou, moose, brown bears, wolves
- Seals, sea lions, walrus, beluga whales
- Largest wild sockeye salmon runs in the world, but...
- Hit hard by the growth of farmed salmon – the region was declared an economic disaster area four of the past seven years.



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The Bristol Bay Region

- Region accessible only by air and sea – no connecting highways to Anchorage.
- Most communities are dependent upon diesel generators for electricity.
- Dillingham residents pay about 21 cents per kilowatt hour – up to 55¢ in villages.
- Anchorage residents pay 8 cents to 10 cents per kilowatt hour.

Economic Development

- Economic development in Bristol Bay tied to lowering the cost of transportation and electrical power for industry and homes
- Fishing industry evolving to value-added processing: need ice to improve salmon quality – lower energy costs reduce cost of ice and increase profit/viability
- Costs \$50.00 to produce one ton of ice in Homer; \$200 per ton in Dillingham.

Togiak, Alaska



Manakotak, Alaska



New Stuyahok, Alaska



BBNC's Project Objectives

- Assess existing power systems in villages
- Survey renewable energy resource possibilities
- Collect and analyze wind data in several villages
- Perform economic analyses to support wind power development

BBNC's Project Tasks

1. Renewable Energy Reconnaissance Study
2. Southwest Alaska Wind Energy Assessment Workshop, October, 2003, Dillingham, Alaska
3. Wind Energy Applications Training Symposium (WEATS), Boulder, CO

BBNC's Project Tasks

4. Anemometer installations
5. Wind resource collection and analysis
6. Economic analysis for wind generation
7. Tribal Energy Program review meetings
8. Rural Energy Conference presentation,
April 2004, Talkeetna, Alaska

Reconnaissance Study

Power system/utility
profiles in Bristol Bay

- Existing power system configurations and performance
- Fuel storage capacities
- Load characteristics
- Efficiencies/O&M

Community profiles

- Population/housing
- Economy and employment
- Community facilities, schools, services
- Potential renewable energy resources

Power Plant, Togiak, AK



Power Plant, Togiak, AK



Power Plant, Togiak, AK



SW Alaska Wind Workshop

October 8-9, 2003,

Dillingham, Alaska

Collaborative effort of:

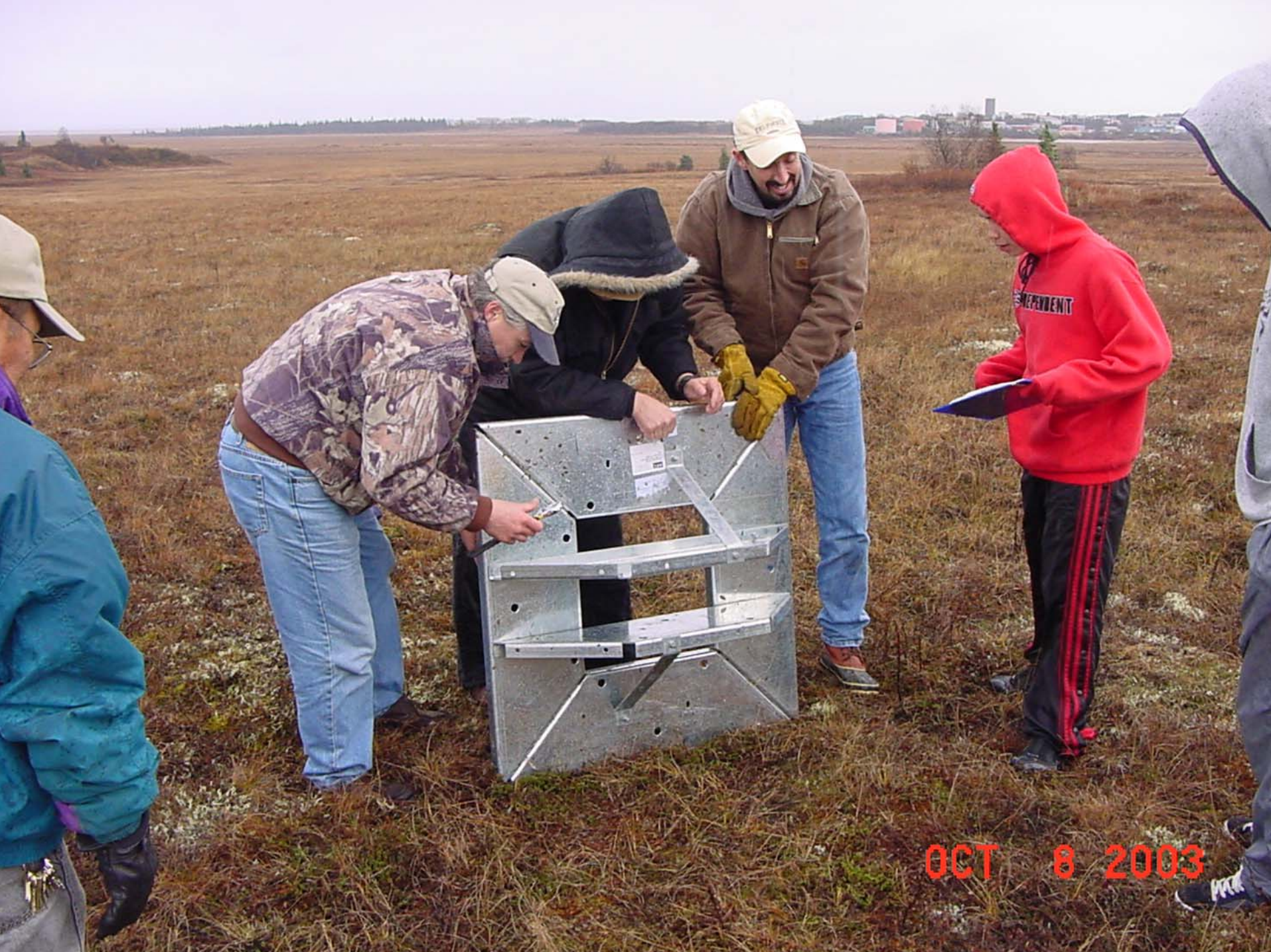
- Bristol Bay Native Corp.
- Alaska Energy Authority
- NREL
- 50 participants from W. Alaska and Aleutians
- Discussed issues of wind power development in SW Alaska





Erect Demonstration Wind Monitoring System, Dillingham Workshop





OCT 8 2003



OCT 8 2003



OCT 9 2003



OCT 9 2003

Met Tower Siting Visit, Oct 4

Participants

- John Wade – meteorologist
- Karen Kronner – avian specialist
- Brent Petrie & Marie Becker – AVEC
- Peter Crimp – AEA
- Doug Vaught - BBNC







OCT 4 2003

Anemometer Installations

Alaska Energy Authority
provided anemometers

- New Stuyahok, Oct. 10
- Planned installations in Spring, 2004:
 - Togiak
 - Dillingham
 - Perryville
 - Naknek



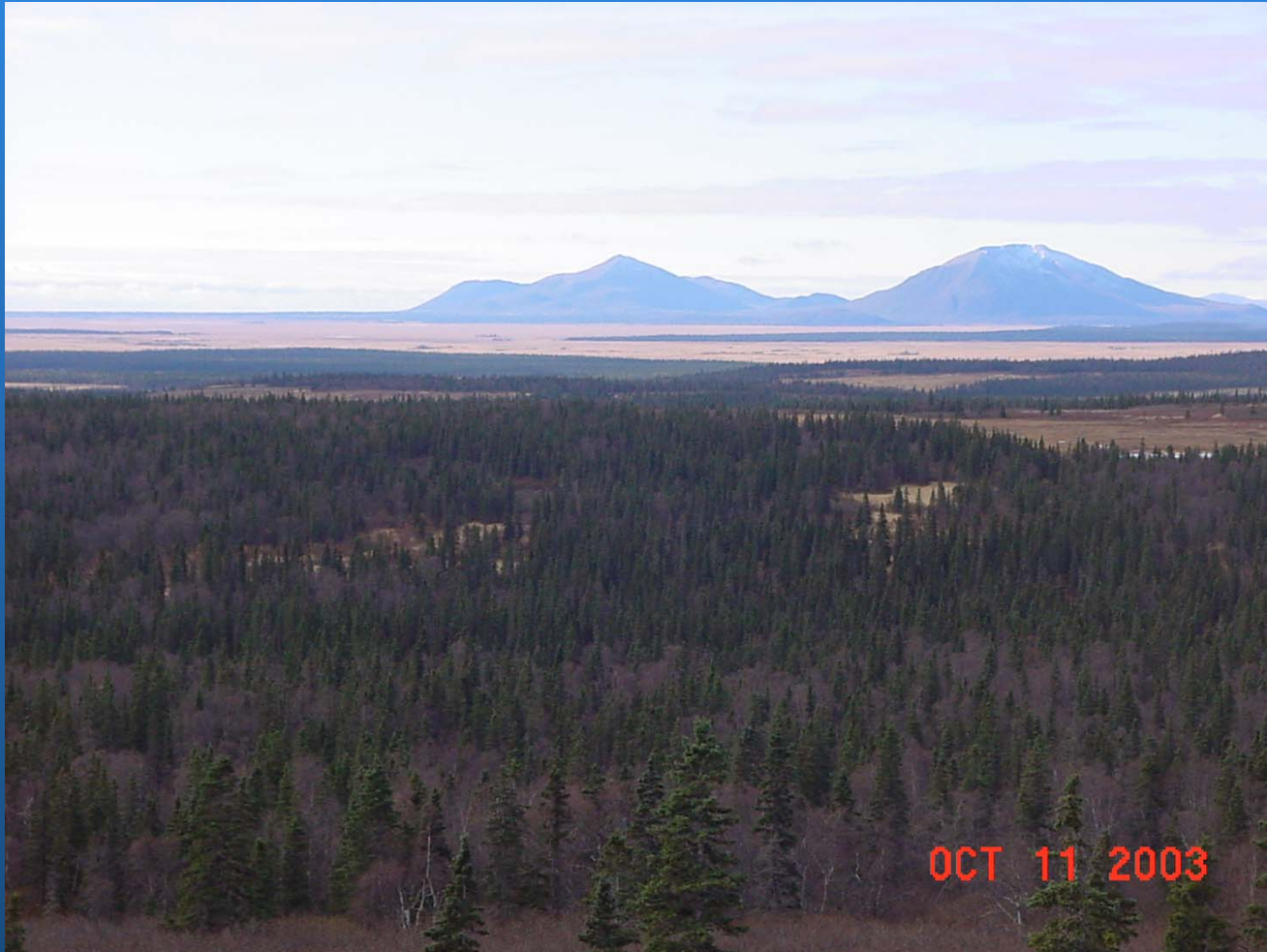


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Meteorological Towers

- Alaska Energy Authority purchased 20 systems from NRG in Vermont – systems we will use
- 30 meter, 6 inch diameter aluminum tower
- Wind speed measured at 30 m and 20 m levels
- Wind direction measured at 30 m level
- Temperature measured at 3 m level
- Data logger: Symphonie Internet Enabled logger – 12 channel, 10 minute data intervals, remote internet communications (if available), otherwise data downloaded by human operator

Potential Anemometer Site Dillingham/Aleknagik



Potential Anemometer Site Togiak



Wind Resource Collection and Analysis

- Contracted services of a meteorologist: John Wade of Portland, Oregon
- Surveyed wind sites in Dillingham, Togiak, New Stuyahok, and Naknek early October; also Perryville and ?
- John Wade will analyze wind data downloaded from Symphonie data loggers and will prepare resource reports
- Planned data collection of 1 year per site

Economic Analysis for Wind Generation

- Request NREL support to assist with analysis of renewable energy options for Bristol Bay villages
 - Focus on villages where wind data will be collected and other villages that may already have data
 - HOMER software
 - ViPOR software
 - Hybrid2 software
- Economic analysis also with Alaska Energy Authority and Alaska Village Electric Coop assistance and methods

WEATS, Boulder, Colorado





OCT 29 2003



OCT 31 2003

Walrus Islands State Game Sanctuary Togiak National Wildlife Refuge

